

Division of Science, Research and Technology
Environmental Assessment and Risk Analysis Element

RESEARCH UPDATE

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Mercury Switch Data Collection Pilot

As part of the New Jersey State effort to reduce the extent of mercury entering the environment, the Department initiated a pilot project to collect data to facilitate the development of a cost-effective program to collect mercury-containing switches from end-of-life vehicles (EOLV), for maximizing the amount of mercury that can be removed prior to their delivery to a scrap recycling facility for processing.

USEPA has estimated that approximately 10 tons of mercury are contained in autos recycled in the US annually. The primary source of mercury is convenience lighting switches, such as those found in the trunks and hoods of most vehicles. This mercury can be released to the environment by scrap auto shredders and by melters that use this scrap metal. It should be noted that emissions from secondary iron and steel melters are estimated to be the greatest single source category from work conducted by NJDEP staff for the NJ Mercury Task Force.

Using guidance and lessons learned from other state and regional efforts, New Jersey conducted a pilot switch removal program to determine the feasibility of removing mercury-containing switches from EOLVs and the potential effectiveness of such removal in preventing the release of this mercury to the environment. The study found that a typical EOLV contains 0.8 mercury convenience lighting switches and each switch contains an average of 1.2 grams of mercury. While removal of a mercury-containing convenience switch takes less than a minute, it may take several minutes to inspect a vehicle to determine the presence of a switch. Approximately one minute is required to document the vehicle and switch removal data, resulting in a total time to remove a mercury switch of less than five minutes.

The total cost of mercury switch removal, handling, transportation, and proper disposal is estimated to be \$3.00 per switch. On this basis, a switch removal program in New Jersey would have an estimated cost of \$1.5 million annually, based on the assumption that approximately 500,000 vehicles are shredded in the state annually. Such a program, if effective statewide, could lead to the collection and proper management of approximately 1000 pounds per year of mercury that might otherwise be released to the environment. Mercury convenience light switches will be present in end-of-life vehicles for at least the next 15 years.

As part of an associated effort, the scrap generated through the pilot project was melted at a steel mill, and a voluntary stack test was performed. Preliminary data suggest that removal of mercury switches prior to shredding resulted in a reduction in mercury emissions of approximately 50 percent.

The report recommended that a switch removal program be implemented on a regional basis due to the significant amount of interstate commerce involved in the handling and processing of EOLVs, as well as the marketing of shredded scrap.

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